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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Applicant	:	Edward M. Moll
Serial No.	:	08/835,625
Confirmation No.	:	5281
Filed	:	April 9, 1997
For	:	THOUGHT CONTROLLED SYSTEM
Group	:	2736
Examiner	:	J. Tweel, Jr.

APPELLANT'S BRIEF PURSUANT TO 37 CFR §1.192

Commissioner for Patents
Board of Patent Appeals & Interferences
Washington, D.C. 20231

Sir:

This brief is being timely filed, in triplicate, under the provisions of 37 CFR §1.192. The United States Patent and Trademark Office is authorized to charge the required fee for a small entity set forth in 37 CFR §1.17(c) for the filing of this brief ($155.00), or any other fee required in connection with the filing of this brief, to counsel's deposit account no. 03-0075.

REAL PARTY IN INTEREST

Edward M. Moll is the real party in interest regarding the above-identified application.

RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences known to the appellant, or the appellant's legal representatives, that will directly affect or be directly affected by, or have a bearing on, the Board of Patent Appeals and Interferences' decision in the pending appeal.

STATUS OF CLAIMS

Claims 1-2, 4, 9, 12, 15, 17-18, 21, 38, 40, 44-45, 51,55 and 67-70 are pending in this application. These claims were rejected in a Final Office Action dated August 28, 2000. Claims 3, 5-8, 10-11, 13-14, 16, 20, 22-37, 49, 41-43, 46-50, 52-54 and 56-66 were previously canceled.

Claims 1-2, 4, 9, 12, 15, 17-18, 21, 38, 40, 44-45, 51,55 and 67-70 are being appealed, and a copy of these claims is included in Appendix A to this brief.

STATUS OF AMENDMENTS

No amendments have been filed subsequent to the Final Office Action dated August 28, 2000.

SUMMARY OF INVENTION

The subject invention is for controlling a computer by thoughts in the brain. For example, where a user, coupled to the invention, thinks the thought of "print the document", or "copy the file", or "delete the file," etc., the invention detects the particular user stimuli that is generated by that specific thought and then operates the computer accordingly. Thus, the present invention is controlling the computer in accordance with the user thought and does *not* attempt to manipulate any virtual pointer, cursor, etc. that appears in the operating system as displayed on the computer screen. It (the thought controlled system (TCS), hereinafter "The present invention") is primarily concerned with finding the radiating properties of the brain or results thereof and selectively applying these findings to the control of computerized devices. The primary mode disclosed accomplishes its

purpose by accepting Magnetic Source Imaging (MSI) findings of the human body and selectively applying these findings to the control of other devices. A.S.N. 08/835,625 (hereinafter "'625 application), p. 16, lines 2-7.

Claim 1 specifies this invention by calling for an apparatus that controls a computer based on one or more stimuli from at least one user thought wherein the apparatus comprises:
(a) stimuli input means (see "Stimuli Detection and Conditioning (SDC)", 101 in Fig. 1) coupled to the user for detecting at least one stimulus being caused by the at least one thought of the user; (b) a computer having an operating system, (see "Thought Controlled Computer (TCC)", 100 in Fig. 1) coupled to the stimuli input means, for processing the at least one stimulus to produce a function control signal (see "Function Control" 307 in Fig. 3) to control the operation of the computer wherein the computer does not require an articulated response from the user (e.g., the user does not have to type in a response, or speak, etc.); and wherein the computer comprises (b)(1) function selection means ("Function Selection", 304 in Fig. 3) for receiving the at least one stimulus and wherein the function selection means comprises a memory including a correspondence between a plurality of previously-stored user stimuli and a plurality of desired control signals; and (b)(2) identification means ("Identification", 306 in Fig. 3), coupled to the function selection means, for comparing the at least one stimulus to the correspondence to identify a function control signal corresponding to the at least one stimulus, and wherein the function control signal is transmitted to the operating system of the computer.

In particular, the present invention utilizes the fact that biomagnetic potentials at particular precise locations in the brain of the user are found to be consistent with a particular *thought* of the

user. For example, in accordance with Walter et al.,[1] the *thoughts* of "moving the foot", or "moving the thumb," or "moving the index finger" generate particular stimuli at precise locations in the person's brain. Thus, *the detection of particular stimuli corresponding to a particular thought* is known in the art. The present invention utilizes this relationship to then make an association of these particular stimuli of deliberate user *thoughts* with a user-desired control function which is then implemented as explained in Figs. 1-3 and pp.19-46 of the present application in order to control a computer. As an example, the '625 application states:

> ...Each stimulus or group of stimuli is identified with a unique designation so that the user can associate stimuli with his or her (related) thoughts. TCS provides for designations of the user's choice to be displayed or otherwise communicated to the user. For example, TCS may display related predetermined pictures or the brain pictorially with the location of each stimulus received. The user may choose a display of the entire brain or a part thereof. The user makes the final choice as to which designation will identify which of the stimulus, or group of stimuli, is used to evoke a particular function of the computer. This information is recorded in the stimuli profile... ('625 application, p. 30, lines 1-9).

This operation is shown in Fig. 3 and is discussed in the Specification at pages 40-41. In particular, the user desires a certain computer control (e.g., print a document) by thinking the thought, e.g., "move the index finger"[2]. The stimuli detection and conditioning 101 detects the particular stimuli in the user's brain that correspond to "moving the index finger" (which is the "designation" that corresponds to printing a document). The pre-stored stimuli[3] associated with that designation is

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[1]Walter et al. "Individual Somatotopy of Primary Sensorimotor Cortex Revealed by Intermodal Matching of MEG, PET, and MRI" Brain Opography, 1992, Vol. 5, No. 2, p. 186, Table 1.

[2] Initially, the designations are those thoughts whose stimuli can be easily and reliably detected on repeated basis. For example, as discussed on p. 27, line 6-17 of the '625 application, user stimuli generated by the motor section of the brain (e.g.,"move index finger"), the sense of smell section of the brain (e.g.,"smell of a gardenia), movement of the eye portion of the brain, etc., all of these generate very specific stimuli that can be detected on a repeatable basis.

[3]Initially, the present invention is trained to associate a user desired designation with a control function. For example, when the user thinks about "moving an index finger", the present invention detects the stimuli that are active when the user thinks about moving the index finger and associates that with the control function "print a document." As a result, the user can accomplish particular computer control by thinking a particular designation.

passed from the designation 305 to the function selection 304 where that particular designation ("moving the index finger") is associated with the control function "print a document". The particular stimuli in the user's brain is compared, in the identification 306, with the pre-stored stimuli from the function selection 304. If there is a match, then the identification 306 generates the function control signal 307 "print a document" and the computer then prints a document.

Claim 2 further specifies that the stimuli input means comprises magnetic source imaging (MSI) means which is discussed throughout the Specification.[4] As stated on page 16 of the Specification,

> MSI has the ability to pinpoint spatial distribution of a magnetic field or stimulus. Used to display a visual image of the source of the location, it may assist the user in relating thought patterns to results obtained. MSI is noninvasive can utilize stimuli from internal parts of the brain remote from the surface. This is more advantageous than EEG and EKG requiring surface electrodes or methods requiring invasive procedures. ('625 application, p. 16, lines 4-8).

Thus, although not the only example of stimuli input means, MSI is the preferred type of stimuli input means because of this ability to pinpoint spatial distribution of a magnetic field or stimulus that are active when a particular thought of the user is occurring.

Claim 4 specifies the present invention as further comprising auxiliary stimuli input means ("Auxiliary Systems 104 in Fig. 1) for supplementing the stimuli input means 101. As stated on pp. 20-21, the auxiliary systems 104 provide means for contributing alternate or additional inputs to the present invention (e.g., noise, voice recognition, illumination condition, movement of other body parts, etc.)[5].

Claim 9 specifies that the present invention may further comprise communicating means for

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[4] '625 application: p. 4, lines 1to p. 9, line 7; p. 16, lines 4-8; p. 19, lines 9, 17, 20; p. 44, line 5; and p. 46, line 3.

[5] '625 application, p. 20, lines 15-20.

communicating information about the user's thoughts. As stated on p. 20 of the '625 application, the auxiliary stimuli detection 105 provides custom or standard interface to make communication possible between the TCC 100 and stimuli monitoring equipment as needed to augment the stimuli input means 101.

Claim 12 specifies that the present invention may further comprise designating means (designating 305 in Fig. 3) which was described earlier regarding the association of user-detected stimuli that can be easily and repeatably detected.

Claim 15 specifies that the stimuli input means includes means for conditioning the at least one stimulus for use by the TCC 100.[6]

Claim 17 specifies that the TCC 100 further comprises a database for storing inaccuracies regarding the correspondence between the plurality of previously-stored user stimuli and the plurality of desired function control signals. As discussed in the Specification,[7] the recording 207 receives inputs of incomplete conclusions which are related to involuntary thoughts to improve the ability of the present invention to more accurately detect user stimuli.

Claim 18 specifies that the present invention further comprises respective databases for storing user unique stimuli for other users and wherein such unique stimuli can be used by the computer for security or identification of users. In particular, a portion of the recording 207 (Fig. 2) establishes a database for each user and identification of the user can be achieved.[8]

Claim 21 specifies stimuli selection means that select stimuli based on acceptance criteria

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[6] '625 application, p. 23, lines 6-22 to p. 24, lines 1-2.

[7] '625 application, p. 35, lines 1-7.

[8] '625 application, p. 39, lines 13-17.

formed by previously-stored user stimuli. In particular, the stimuli selection 204 criteria is defined in terms of signal strength and correlation factor with other entries[9].

Claim 38 specifies means for detecting coactive stimuli for increasing the dependability of the function selection means. In particular, where two stimuli sources are found to be associated and always coactive, the uniqueness of this stimuli will provide increased dependability. One example of multi-location stimuli occurring is the interpretation of sound occurring at multiple places in the brain where sound source direction and message content are determined separately[10].

Claim 40 specifies means for detecting sequential stimuli for increasing the dependability of the function selection means. In particular, two sequential thought signals, rather than one, is required in order to avoid errors[11].

Claim 44 specifies localization means for identifying locations in the user of the source of the at least one stimulus. In particular, this means, e.g., magnetic source imaging (MSI) is discussed in detail on p. 3, line 20 to p. 7, line 5 and pp. 27-28 of the '625 application.

Claim 45 specifies an adaptive means such that the present invention localization means can adapt to a change of location of the source of the at least one stimulus whenever the user moves. In particular, where the user moves his head, the need to reliably detect the particular stimuli of the deliberate thought requires that the localization means operate without being affected by the user head movement.[12]

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[9]'625 application, p. 28, lines 16-17.

[10]'625 application, p. 31, lines 8-12.

[11]'625 application, p. 30, lines 18-19.

[12]'625 application, p. 24, lines 3-18.

Claim 51 specifies bodily communication means for coupling to the user, or within the user, for providing a communication path for the at least one stimulus between the user's brain and a body part of the user that is being controlled. In particular, the bodily communication means forms a "gap-bridger" between the user's brain and the body part (e.g., arm or leg muscle) that may be paralyzed[13].

Claim 55 is directed to the present invention that includes: (1) a detecting means for detecting one or more stimuli sensed from one or more thoughts of the user (see "Stimuli Detection and Conditioning (SDC)", 101 in Fig. 1); (2) selecting means (see "Function Selection", 304 in Fig. 3) for receiving one or more of the detected stimuli and then selecting a correspondence to one or more user stimuli to a selected function and which does not require an articulated response from the user (e.g., the user does not have to type in a response, or speak, etc.); (3) identification means (see "Identification", 306, in Fig. 3) for identifying one or more of the detected stimuli as corresponding to the selected function for producing a function control signal; and (4) receiving means ("Computer Operation", 301, in Fig. 3) for receiving the function control signal to control the computer.

Claim 67 is directed to the present in the present invention that includes: (1) stimuli input means ("Stimuli Detection and Conditioning (SDC)" 101 in Fig. 1) for detecting at least one stimulus caused by at least one thought *pattern*[14] of the user; (2) a computer ("Thought Controlled Computer (TCC)", 100 in Fig. 1), coupled to the stimuli input means, including an operating system ("Computer Operation", 201 in Fig. 2) that processes the at least one stimulus to produce a function control signal ("Function Control Signal" 307 in Fig. 3) to control the computer and wherein the

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[13] '625 application, p. 41, line 16 to p. 42, line 16.

[14] '625 application, p. 19, line 11.

computer does not require an articulated response from the user (e.g., the user does not have to type in a response, or speak, etc.) and wherein the computer further comprises: (a) function selection means ("Function Selection" 304, in Fig. 3) for receiving the at least one stimulus and wherein the function selection means comprises a memory that includes a correspondence between a plurality of previously-stored user stimuli and a plurality of desired function control signals; (b) identification means ("Identification" 306 in Fig. 3), coupled to the function selection means, for comparing the at least one stimulus to the correspondence to identify a function control signal corresponding to the at least one stimulus and wherein the function control signal is transmitted to the operating system of the computer.

Claim 68 is directed to the present invention that includes: (1) detecting means ("Stimuli Detection and Conditioning (SDC)" 101 in Fig. 1) for detecting one or more stimuli caused by *one or more thought patterns in the user's body*; (2) a selecting means (see "Function Selection", 304 in Fig. 3) for receiving one or more of the detected stimuli and then selecting a correspondence to one or more user *thought patterns* to a selected function and which does not require an articulated response from the user (e.g., the user does not have to type in a response, or speak, etc.); (3) identification means (see "Identification", 306, in Fig. 3) for identifying one or more of the detected stimuli as corresponding to the selected function for producing a function control signal; and (4) receiving means ("Computer Operation", 301, in Fig. 3) for receiving the function control signal to control the computer.

Claim 69 is directed to the present invention that includes: (1) stimuli input means ("Stimuli Detection and Conditioning (SDC)" 101 in Fig. 1) for detecting one or more stimuli caused by at

least one user thought *category*[15]; (2) a computer ("Thought Controlled Computer (TCC)", 100 in Fig. 1), coupled to the stimuli input means, including an operating system ("Computer Operation", 201 in Fig. 2) that processes the at least one stimulus to produce a function control signal ("Function Control Signal" 307 in Fig. 3) to control the computer and wherein the computer does not require an articulated response from the user (e.g., the user does not have to type in a response, or speak, etc.) and wherein the computer further comprises: (a) function selection means ("Function Selection" 304, in Fig. 3) for receiving the at least one stimulus and wherein the function selection means comprises a memory that includes a correspondence between a plurality of previously-stored user stimuli and a plurality of desired function control signals; (b) identification means ("Identification" 306 in Fig. 3), coupled to the function selection means, for comparing the at least one stimulus to the correspondence to identify a function control signal corresponding to the at least one stimulus and wherein the function control signal is transmitted to the operating system of the computer.

Claim 70 is directed to the present invention that includes: (1) detecting means ("Stimuli Detection and Conditioning (SDC)" 101 in Fig. 1) for detecting one or more stimuli caused by *one or more thought categories in the user's body*; (2) a selecting means (see "Function Selection", 304 in Fig. 3) for receiving one or more of the detected stimuli and then selecting a correspondence to one or more user *thought categories* to a selected function and which does not require an articulated response from the user (e.g., the user does not have to type in a response, or speak, etc.); (3) identification means (see "Identification", 306, in Fig. 3) for identifying one or more of the detected stimuli as corresponding to the selected function for producing a function control signal; and (4)

[15] '625 application, p. 27, line 8.

receiving means ("Computer Operation", 301, in Fig. 3) for receiving the function control signal to control the computer.

ISSUES

1. Whether Claims 1, 55 and 67-70 are unpatentable under 35 U.S.C. §112, first paragraph, as being based on a non-enabling disclosure.

2. Whether Claims 1, 4, 9, 12, 15, 17, 21, 38, 40, 51, 55 and 67-70 are unpatentable under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,474,082 (Junker, hereinafter "Junker").

3. Whether Claim 2 is unpatentable under 35 U.S.C. §103(a) over Junker in view of U.S. Patent No. 5,594,849 (Kuc et al., hereinafter "Kuc").

4. Whether Claim 18 is unpatentable under 35 U.S.C. §103(a) over Junker in view of U.S. Patent No. 4,949,726 (Hartzell et al., hereinafter "Hartzell").

GROUPING OF CLAIMS

Claims 1, 55 and 67-70 do not stand or fall together because they are separately patentable for the reasons set forth in the "Argument" section below. However, Claims 67-70 do stand or fall together.

Claims 1, 4, 9, 12, 15, 17, 21, 38, 40, 51 do stand and fall together with regard to the second ground of rejection.

ARGUMENT

Claim 1 is separately patentable from Claim 55 and from Claims 67-70 because the invention claimed therein is directed to an apparatus that detects one or more stimuli caused by at least one thought of the user and from that, in combination with a function selection means and identification means of a computer, controls the computer operation. Claim 55 is directed to a different apparatus

that detects one or more stimuli caused by thoughts in the user's body and from that, in combination with a selecting means, identification means and receiving means of a computer, controls the computer operation. Claims 67-70 are directed to a different apparatus that detects at least one stimulus caused by the thought pattern of a user, or thought category of the user, and from that, in combination with a function selection means and identification means, or in combination with a selecting means, identification means and receiving means, of a computer, controls the computer operation.

I. THE EXAMINER ERRED IN CONCLUDING THAT CLAIMS 1, 55 AND 67-70 ARE UNPATENTABLE UNDER 35 U.S.C. §112, FIRST PARAGRAPH

In the Office Action dated August 28, 2000, the Examiner finally rejected Claims 1, 55 and 67-70 under 35 U.S.C. §112, first paragraph as containing subject matter that is not described in a way to enable one skilled in the art to which it pertains to make or use the invention. In particular, the Examiner states that:

> The applicant seems to miss the point of the rejection under 112, first paragraph. It is not denied that the technology to achieve control of a computer using EEG or Neurophysiology methods does not exist. Nor is it denied that it may not be possible to construct some sort of apparatus where a user's biological patterns may be used to influence the control of a computer using said biological patterns. However, there has been no sufficient explanation as to how or why a user's thoughts come into play during the execution of the controlling at all. It is as if to say that "sensing a user's thought" appears to be a gross misnomer if all that is occurring during the control of the computer is the sensing of biomagnetic potentials. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. As of now, there is no patentable difference between what the applicant considers as their "thought" controlled system and the prior art systems used to enable it. Unfortunately, it may require a decision by the courts to finally decide the viability of the applied rejection.

Applicant has explained in great detail, in the patent application (i.e., the '625 application)

as filed and through the course of three years[16], how the thoughts of the user come into play during the execution of the computer control. In particular, the present invention, TCS, utilizes the fact that biogmagnetic potentials ***at particular precise locations in the brain of the user*** are found to be consistent with a particular ***thought*** of the user. For example, in accordance with Walter et al.,[17] the *thoughts* of "moving the foot", or "moving the thumb," or "moving the index finger" generate particular stimuli at precise locations in the person's brain. Thus, *the detection of particular stimuli corresponding to a particular thought* is known in the art[18]. The present invention utilizes this relationship to then make an association of these particular stimuli of deliberate user *thoughts* with a user-desired control function which is then implemented as explained in Figs. 1-3 and pp.19-46 of the present application in order to control a device or system, e.g., a computer. As an example, the present application states:

> ...Each stimulus or group of stimuli is identified with a unique designation so that the user can associate stimuli with his or her (related) thoughts. TCS provides for designations of the user's choice to be displayed or otherwise communicated to the user. For example, TCS may display related predetermined pictures or the brain pictorially with the location of each stimulus received. The user may choose a display of the entire brain or a part thereof. The user makes the final choice as to which designation will identify which of the stimulus, or group of stimuli, is used to evoke a particular function of the computer. This information is recorded in the stimuli profile... ('625 application, p. 30, lines 1-9).

The stimuli selection 204 and function designation 205 of the present invention discussed on pages 26-31 of the '625 application provide the requisite detail about how this association and control are achieved. Thus, the '625 application provides ample support in accordance with 35 U.S.C. §112,

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[16]Applicant's responses of March 17, 1998; August 26, 1998; January 29, 1999, including an interview with the Examiner on January 25, 1999; Applicant's Preliminary Amendment as part of a CPA filed on October 12, 1999 and Applicant's response of May 31, 2000.

[17]Walter et al. "Individual Somatotopy of Primary Sensorimotor Cortex Revealed by Intermodal Matching of MEG, PET, and MRI" Brain Opography, 1992, Vol. 5, No. 2, p. 186, Table 1.

[18]See §§11-18 of Edward M. Moll's Declaration Under 37 CFR §1.132.

first paragraph as to how a user's thoughts are utilized in controlling a device/system and to enable any person skilled in the art to make and use the subject matter of Claims 1, 55 and 67-70.

Furthermore, it is the Applicant who conceived the idea of *applying* this feature of detecting stimuli *that are associated with particular user thoughts* (e.g., as stated above, "moving the foot", "moving the thumb", etc.) *to control an apparatus, e.g., a computer*. In particular, the present invention is able to detect such stimuli that are known to be generated only by a certain user thought (e.g., move the foot, move the thumb, etc.); the present invention is then trained with the user to associate these stimuli with a particular control function, e.g., print a document. In other words, if the user were to think "move the foot", distinct stimuli in the user brain are active and the present invention detects these stimuli; and since the present invention has been trained to associate those stimuli with a particular function, "print a document", the present invention, upon detecting these particular stimuli, then commands the computer to print a document. Therefore, the present invention detects stimuli that occur when *deliberate thoughts* ("move the foot", "move the thumb", etc.) of the user are active. Without such deliberate thoughts, the present invention would simply be detecting the user's brain activity and would have no reliable way of associating a desired apparatus control function with stimuli detectable in the user.

Thus, this invention is not at all the same thing as simply detecting biomagnetic potentials to influence the control of a computer, as characterized by the Examiner. Simply detecting biomagnetic potentials of a living being then applying that electrical activity to a computer is not the Applicant's invention at all. As a result, the Examiner's characterization that, with regard to the present invention, "...all that is occurring during the control of the computer is the sensing of biogmagnetic potentials" ignores all of the above discussion.

The Examiner's further assertion that "there is no patentable difference between what the applicant considers as their 'thought' controlled system and the prior art systems used to enable it" also ignores the fact that no prior art has disclosed, taught or even suggested utilizing the distinct stimuli that are detected for a deliberate thought of the user ("move the foot", "move the thumb", etc.) for generating a command to control an apparatus such as a computer. The prior art systems[19] such as that disclosed in Walter et al. simply detect particular stimuli for a particular user thought ("move the foot", "move the thumb", etc.). There is no disclosure, teaching or suggestion to *then use* this ability to detect particular stimuli for a particular user thought *to control an apparatus*, such as a computer. In addition, Applicant *has* specified a structural difference from these references in that the present invention includes (using Claim 1 as an example):

> (1) ***function selection means*** for receiving said at least one stimulus and wherein said function selection means comprises a memory including a correspondence between a plurality of previously-stored user stimuli and a plurality of desired function control signals;
>
> (2) ***identification means***, coupled to said function selection means, for comparing said at least one stimulus to said correspondence to identify a function control signal corresponding to said at least one stimulus, said function control signal being transmitted to the operating system of said computer.

None of the references disclose such structures.

Thus, Applicant respectfully submits that Claims 1, 55 and 67-70 are compliant with 35 U.S.C. §112, first paragraph and respectfully submits that the §112, first paragraph rejection be reversed.

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[19] A listing of references, along with copies thereof, pertaining to such systems is set forth in an Information Disclosure Statement that was filed on October 13, 1999. These references were discussed in a Declaration under 37 CFR §1.132 by the Applicant that was filed along with the CPA filed on October 12, 1999.

II. THE EXAMINER ERRED IN CONCLUDING THAT CLAIMS 1, 4, 9, 12, 15, 17, 21, 38, 40, 51, 55 AND 67-70 ARE UNPATENTABLE UNDER 35 U.S.C. §102(b) AS BEING ANTICIPATED BY JUNKER

The Examiner finally rejected Claims 1, 4, 9, 12, 15, 17, 21, 38, 40, 51, 55 and 67-70 under 35 U.S.C. §102(b) as being anticipated by Junker. In particular, the Examiner states that:

> For claim 1, the apparatus for controlling a computer operation based on at least one stimulus sensed from a user taught by **Junker** includes the following claimed subject matter, as noted, 1) the claimed stimuli input means is met by the electrodes (22) coupled to the user (No. 10) for detecting at least one stimulus being caused by the thought of the user, 2) the claimed computer having an operating system is met by the control system (No. 29) having an operating system (No. 31) for processing said at least one stimulus to produce a function control signal to control the operation of the operating system without requiring the user to manipulate the user controls, 3) the claimed function selection means comprising a memory is met by the data store (No. 19) in which multiple brain-body signals are stored with each sample from the user, and 4) the claimed identification means for comparing the stimulus to identify a function control signal is met by the foreground loop processor (No. 39) that uses the brain-body signal as a basis for the presentation of various audio and visual feedback. Also external devices such as wheelchair, cursor control, and music synthesizer is connected to the control system for operation.

Junker is basically an improvement on biofeedback, i.e., the recognition that an aggregate signal of EEG and EMG biopotentials is necessary for proper use of biofeedback. Biofeedback is limited to interpreting frequency spectra detected on the body. Presently, science does not know exactly how these spectra are related to thoughts. What is known is that a person can control changes in these spectra to some degree if the effect of changing his/her thinking is shown to him/her in real time. It is apparently insignificant to Junker how the user's thoughts change the EEG/EMG magnitude and frequency. In particular, Junker relies on detecting and comparing frequency spectra emitted by the brain (EEG signals) and by the muscles (EMG signals), rather than thoughts. It then appears that only partial control of the computer, i.e., certain controls of the computer can be manipulated by the user's EEG/EMG signals (see Figs. 10-13 of Junker) but standard input means, i.e., use of the keyboard or mouse, is still required to select functions from the options bar (Display,

Music, Games, Cursor, Setup, Escape, Help), or change gain and response settings (Fig. 10). Junker offers up to 10 control signals but fails to disclose how the user can control any of these signals or how to control a plurality of these signals simultaneously. The Junker system requires continual user feedback and its elaborate frequency/phase comparison iterations are not able to detect the person's particular thoughts[20].

In contradistinction, the present invention uses, for example, MSI to detect stimuli of individual thoughts whether these thoughts are radiated from a single area of the brain or whether multiple areas combined indicate that particular thought. Stimuli detection and conditioning 101 presents the thought so that it can be compared with the function select to form a specific function. Applicant uses particular thoughts whereas Junker requires the user learn a combination of mental and physical activities which change the characteristics of a comparatively small number of frequency bands called control signals.

Moreover, as stated on page 11, line 18- page 12, line 11, the inventions as claimed in the '625 application clearly distinguishes over biofeedback control mechanisms, such as that disclosed in U.S. Patent No. 5,337,100 (Pope) which is a similar biofeedback mechanism to the Junker system. Neither Pope nor Junker teach or suggest detecting the thoughts of the user. Furthermore, the present invention supports virtually as many stimuli as the person has thoughts without the biofeedback delay.

In addition, counter to what the Examiner asserts, there ***are*** structural differences between the

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[20]It, therefore, appears that Junker actually teaches away from the TCS of the present invention since Junker expends so much effort in detecting brain states by comparing phase-locked loop results (Junker, col. 12, lines 53-60) to determine whether the phase was advancing or retarding, while using so much system reaction time for feedback from the user for every selection of reference frequencies (Junker, col. 12, lines 19-21). This operation of the phase-locked loop program several times equal to the number of control signal frequencies selected by the user requires considerably more time than, as in the present invention, it would take to detect a stimulus and compare its number with a thought identification number.

present invention and the Junker patent. Junker does *not* include the following elements of Claims 1, 67 and 69 of the present application:

> 1. function selection means for receiving said at least one stimulus and wherein said function selection means comprises a memory *including a correspondence between a plurality of previously stored user stimuli and a plurality of desired control functions*; and
>
> 2. identification means, coupled to said function selection means, *for comparing said at least one stimulus to said correspondence to identify a function control signal corresponding to said at least one stimulus*, said function control signal being transmitted to the operation system of said computer.

Neither of these elements are shown in Junker. With respect to the assertion that the function selection means comprising a memory is met by the data store 19 of Junker in which brain-body signals are stored, Junker does not show nor suggest a *correspondence between a plurality of previously stored user stimuli and a plurality of desired control functions*[21]. With respect to the assertion that the identification means is met by the foreground loop processor 39 of Junker, nowhere is there shown or suggested in Junker apparatus *for comparing said at least one stimulus to said correspondence to identify a function control signal corresponding to said at least one stimulus*[22]. Thus, neither of these two elements are shown, taught nor suggested in Junker.

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[21]In fact, the only thing that Junker states about the data store 19 is the following:

> "The digital brain-body signal is stored in data store 19 with each sample." (Junker, col. 7, lines 2-3).
>
> "The data store 19 stores data associated with the execution of programs within the background loop processor 35 and foreground loop processor 39. (Junker, col. 7, lines 42-45).

[22]The fact that Junker uses a foreground loop processor 39 which uses the brain-body signal as a basis for the presentation of various audio and visual feedback still does not show nor suggest apparatus for *comparing of at least one stimulus to a correspondence between a plurality of previously stored user stimuli and a plurality of desired control functions*. Furthermore, the actual excerpt from Junker concerns a *display* program 37:

> A display generation program 37 within the foreground loop processor 39 uses the brain-body signal and generated control signals as a basis for the presentation of various audio and visual feedback to the user. Junker, col. 7, lines 30-33.

As mentioned earlier, during operation of the present invention, the present invention does not require feedback, audio or visual.

In the August 28, 2000 Office Action, the Examiner responded to the previous paragraph as follows:

> These statements are incorrect. The Examiner presents as evidence the specification of **Junker** (Col. 7, Lns 12-22) wherein input by the user produces "control signals at reference frequencies the user has chosen from a range of selectable frequencies". A range of selectable frequencies must be previously stored for the user to choose them. Furthermore, the control system (No. 29) tracks "the predominant frequencies of the brain-body signal within each selected control signal reference frequency band." As gathered from the disclosure, the predominant frequency corresponds to a desired control function such as a plurality of user application programs the user may manipulate using said brain-body signal." pp. 13-14, August 28, 2000 Office Action.

The Examiner is not, however, taking into consideration Applicant's limitation of the user's specific thought which causes the user's at least one stimuli to transmit a control function to the computer. "Specific thought" and the lack of feedback requirement are the premise on which the limitation of Claim 1(b)(1) "function selection means" is based. Utilization of the user thoughts are truly the difference between the present invention of detecting a definitive thought vs. Junker's relying on the change of intensity of arbitrary subject matter in the brain without regard to the actual thought.

Furthermore, control system (No. 29) of Junker tracks 'the predominant frequencies of the brain and body to determine changes for illustration to the user to experiment and dynamically search for the appropriate brain and body stimuli *in the absence of specific thought knowledge*. The Examiner's statement "... predominant frequency corresponds to a desired control function..." is not correct because predominant frequency does *not* compare to user's thought corresponding to a desired control function.

The Examiner's quotes in his above comment are taken from Junker's mechanism for indicating changes of the magnitude and phase of the aggregation of EEG and EMG biopotentials of the user's frequency *without regard to predetermined thoughts*. The objective of Junker is to

facilitate the user adjusting or changing whatever reaction he/she can find to alter his/her emitted frequencies. The Examiner's "manipulate using said brain-body signal"[23] is used in the context of changing the level of feedback as opposed to conscious thought to select, as set forth below:

> "The magnitude values and shifting frequency values of the control signals are presented as feedback to the user." Junker, col. 4, lines 43-44;
>
> and
>
> "...the user can produce desired control actions with the invention by guiding the changes in their control signal magnitudes and frequency shifts." Junker, col. 4, lines 48-50.

Junker illustrates changes to the user as to whether his/her brain and body responses are approaching set limits. Hence the requirement "feedback". Therefore, Junker requires experimentation with dynamic feedback to the user each time a function control is sought:

> "... control signal is computed and used to indicate [to the user]" Junker col. 4, lines 24-25-"... the changing frequency shift of each control signal." Junker col. 4, lines 41-42.

In contrast, the present invention uses thought to control a computer or other devices, i.e., the user thinks " X" and the present invention provides X′ control function. Thoughts without feedback produce at least one predetermined stimulus to accomplish a predetermined control function. The present invention does not require the user to experiment dynamically with feedback as the Examiner asserts in order to search and "manipulate" to accomplish the desired control function.

As mentioned earlier, feedback between the control system and the user is essential to the operation of Junker's control system as follows:

> "... the control signals are fed back to the user via audio and/or video presentations, ...Via feedback presentations of control signal magnitudes and reference frequencies, the user is able to sense how changes of EEG and EMG biopotentials effect the control signals. The response of the user determines

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[23]It should be further noted that the "brain-body signal" of Junker is not one stimulus. Rather, the brain-body signal of Junker requires an aggregate signal of both EEG and EMG biopotentials, without which, the Junker system would no longer be different than other biofeedback systems. See Junker, col. 3, lines 59-64.

the flow through the remainder of the foreground loop. Once entered, the foreground loop processor 39 continuously loops back to the display step 304 which updates the user presentations based on the magnitude and phase signal values computed from the last interrupt. The user is then able to control functions of a device in response to the control signals." Emphasis added, Junker col. 8, lines 21-33.

Nor does Junker disclose the following elements specified in Claims 55, 68 and 70:

(b) selecting means for receiving one or more of said detected stimuli to perform a function *and selecting a correspondence to one or more user thoughts[24] to produce a selected function* and wherein said selecting means does not require an articulated response from the user; and

(c) identification means *for identifying one or more said detected stimuli as corresponding to said selected function* for producing a function control signal,

With respect to the assertion that the selecting means is met by the user input devices 20 (such as the keyboard, mouse and others) of Junker, nowhere is there shown or suggested in Junker where such user input devices *select a correspondence to one or more user thoughts[25] to produce a selected function*. With respect to the assertion that the identification means is met by the foreground loop processor 39, as stated previously with respect to Claims 1, 67 and 69, nowhere does Junker show or suggest that the processor 39 *identifies one or more said detected stimuli as corresponding to said selected function for producing a function control signal*.

A functional diagram of these distinctions are depicted in the attached Exhibit A labeled "Comparison of Junker to TCS". In a typical biofeedback system, such as Junker, the user is in a loop, i.e., the user watches a system and attempts to manipulate controls of the system by concentrating on a particular feature (e.g., a cursor in Junker); if he/she is successful, the manipulation is achieved; if he/she is not successful, the user must somehow modify his/her concentration to manipulate the desired control. Thus, system control is limited and short term: as long as the user is watching, or somehow perceiving the state of the system on a substantially

[24]In Claim 68, the term "thought" is replaced with "thought patterns" and in Claim 70 the term "thought" is replaced with "thought categories."

[25]In Claim 68, the term "thought" is replaced with "thought patterns" and in Claim 70 the term "thought" is replaced with "thought categories."

continuous basis, he/she can manipulate a specific control by concentrating.

In contrast, the present invention does *not* require the loop structure, i.e., the user does *not have to be monitoring the status of the system to achieve control*[26]. For example, if a blind person wished to control a computer, e.g., print a document, using the present invention, the user need only

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[26]In the Office Action dated August 28, 2000, with regard to this statement and the previous paragraph, the Examiner stated that:

> The inputs referred to by Applicant are not thoughts, they are biomagnetic potentials arisen by prior art devices such as PET and Magnetic Resonance Imaging. The input depending on a user's thoughts have yet to be defined.

However, as stated several times in Applicant's prior responses, the '625 application and as set forth above, the present invention is *not simply* detecting any biomagnetic potentials; the present invention detects biomagnetic potentials that are reliably associated with deliberate thoughts (e.g., move the finger, move the thumb, etc.) of the user, i.e., using localization -determining the location in the brain of the stimuli corresponding to this deliberate thought. In particular,

> ... Applicant's invention is the *combination* of: (1) detecting those stimuli created by a user's thought related to computer control[1] (e.g., print a document, copy a file, etc.); (2) function selection means that receives these stimuli and comprises a memory that includes a correspondence between a plurality of previously-stored user stimuli and a plurality of desired control functional control signals (e.g., print a document, copy a file, etc.); and (3) identification means, coupled to the function selection means, for comparing the stimuli to the correspondence and to identify the particular function control signal that is then transmitted to the computer to control it. p. 8, lines 7-15 of Preliminary Amendment of CPA filed on 10/12/99;
>
> "There are sufficient dipole stimuli which are voluntary to the user and have coordinates *which are reliably distinguishable over the other thoughts*. This is evidence by movements of a finger, foot and other body parts as evidence in papers from Bocker, Chayne and Walker." emphasis added, p. 8, footnote 1 of Preliminary Amendment of CPA 10/12/99;
>
> "... the fact that biomagnetic potentials at particular precise locations in the brain of the user are found to be consistent with a particular thought of the user." Page 2, line 10 of Applicant's 5/31/00 response;
>
> "...the thought of moving the foot or moving the thumb or moving the finger..." Page 2, line 12 of Applicant's 5/31/00 response;
>
> and
>
> "...stimuli within the brain are the next phase for acquiring thoughts for TCS operation. Some specific brain functions which stimulate recognizable SDC 101 outputs are the user's concentration on: 1) the thought of saying a particular word, 2) visualizing a simple article of 3) action type thinking of a particular muscle movement, i.e., foot, arm, hand, finger, etc..." '625 application, p. 28, lines 1-5.

Thus, Applicant *has defined* the user's thought associated with such stimuli or biomagnetic potentials.

think a predefined thought, e.g., "move a finger" and the present invention interprets the stimuli that are activated when he/she thinks about moving a finger to command the computer to print the document[27]. Thus, using the present invention, the user avoids the "feedback" required of systems that utilize biomagnetic potentials.

How is this accomplished? As discussed previously, because the present invention has stored an association between stimuli generated when the user thinks about, e.g., moving a finger with "printing a document," ***whenever*** the present invention detects the particular stimuli from the user that correspond to "moving a finger", the present invention commands the computer to print a document. Thus, there is no feedback required by the user[28]. He/she does not need to concentrate on moving a cursor, e.g., upward and to the left to position it on the "PRINT" command in the screen. Such detailed and difficult manipulation is entirely avoided by the present invention by utilizing the "thought" of the user.

Biofeedback relies on experimentation by the user and as such, provides a system of alternatives for the user to search for his/her desired result. Biofeedback thrives on giving the user an indication of whether he/she is getting closer or further away from the desired objective. In operation, the present invention acts on the premise that the user is capable of spontaneously producing the specific thought related biomagnetic potentials without dynamic experimentation.

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[27]See '625 application p. 42, line 17 - p. 43, line 2; p. 41, line 16 to p. 42, line 2; and p. 42, lines 13-16.

[28]It should be understood that once in operation the present invention does not require a loop structure. However, when first associating a particular designation with a stimulus (or stimuli) input, there is a need for feedback as stated on p. 30, lines 1-9 of the '625 application: "TCS feedback to the user is consistent with good human factors; Each stimulus or group of stimuli is identified with a unique designation so that the user can associate stimuli with his or her (related) thoughts...The user makes the final choice as to which designation will identify which of the stimulus, or group of stimuli, is used to evoke a particular function of the computer. This information is recorded in the stimuli profile..."

An analogy to emphasize the contrast between biofeedback and the present invention could be stated as searching vs. predetermined accuracy. Imagine a row of light switches. Biofeedback does not, figuratively, label each individual switch. Junker creates a trial and error situation feeding back which light was lit. In contrast, the present invention establishes a specific thought label for each switch and enables each selection of the desired switch on the first attempt. A blind user, for example, may hear the click of the switch giving him/her assurance the switch has operated but does not need to see the light to know the correct switch was chosen.

Thus, for all of these reasons, Applicant respectfully submits that Junker does not anticipate Claims 1, 55, and 67-70 and respectfully requests that the §102(b) rejection be withdrawn. Furthermore, for the same reasons, all of the dependent claims, namely Claims 4, 9, 12, 15, 17, 21, 38, 40, 51, are also patentable over Junker. In addition, since Claims 44-45 are also dependent upon Claim 1, they are also patentable over Junker for the same reasons.

III. THE EXAMINER ERRED IN CONCLUDING THAT CLAIM 2 IS UNPATENTABLE UNDER 35 U.S.C. §103(a) OVER JUNKER IN VIEW OF KUC

The Examiner finally rejected Claim 2 as being unpatentable under 35 U.S.C. §103(a) over Junker in view of Kuc. In particular, the Examiner states that:

> For claim 2, the apparatus taught by **Junker** includes the claimed subject matter as noted in the rejection of claim 1 above. However, nowhere in the reference is biomagnetic mentioned as stimuli input means.
>
> The biomedical magnetism imaging apparatus and method taught by **Kuc et al** performs biomagnetic imaging to determine the location and intensity of current sources within a subject by sensing the magnetic field within the subject. This is accomplished using a number of Superconducting Quantum Interference Devices (SQUIDs) which are fed magnetic field information using pickup coils (No. 4). One great advantage of this invention is the fact that fewer pickup coils and SQUID magnetometers are needed to gather needed information in a lesser amount of time than previous biomagnetometers. Also, input from multiple dipoles can be displayed simultaneously.
>
> As the system of **Junker** utilizes bio-imaging means to achieve its purposes, it presents the perfect platform onto which an imaging system such as **Kuc** may be applied. As EEG and EMG signals are already gathered, the MSI data could easily be examined for the same purposes. It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate

and MSI system similar to Kuc into the brain-body actuated system of Junker for the purpose of gathering vital information using fewer pickup coils in a lesser amount of time. pp. 8-9, August 28, 2000 Office Action.

However, since Claim 2 is dependent upon Claim 1, Claim 2 is patentable for the same reasons. In addition, as stated in previous responses by Applicant, Junker is directed to the recognition that an aggregate signal of EEG and EMG biopotentials which is necessary for proper feedback and which is limited to interpreting frequency spectra detected on the body. Junker does *not teach or even suggest implementing localization*, i.e., determining coordinates of stimuli generated by the thoughts of the user, as is accomplished by the stimuli input means of the present invention which can be achieved using magnetic source imaging, such as that suggested by Kuc. Thus, there is no incentive to even combine Junker with Kuc[29]. Therefore, for all of the above reasons, Applicant respectfully submits that Claim 2 is patent able over the art of record and respectfully requests that the §103(a) rejection be withdrawn.

IV. THE EXAMINER ERRED IN CONCLUDING THAT CLAIM 18 IS UNPATENTABLE UNDER 35 U.S.C. §103(a) OVER JUNKER IN VIEW OF HARTZELL

The Examiner finally rejected Claim 18 as being unpatentable under 35 U.S.C. §103(a) over Junker in view of Hartzell. In particular, the Examiner states that:

> For claim 18, the apparatus taught by **Junker** includes the claimed subject matter as discussed in rejection of claim 1. However, one of the features that the reference does not teach is that the apparatus can be used by a plurality of users. Also a database for storing unique stimuli for respective users is also not included.
>
> The brainwave-responsive apparatus taught by **Hartzell** teaches an apparatus that is for use with one or more subject simultaneously for causing an output device to perform productive functions.

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[29]The mere fact that the references cited may be modified or even combinable does not allow the PTO to meet its burden absent a suggestion in the cited art of the desirability of the modification or combination. Moreover, the PTO may not "use the claimed invention as an instruction manual or 'template' to piece together the teachings of the prior art so that the claimed invention is rendered obvious." In re Fritch, 23 U.S.P.Q.2d 1780 (Fed. Cir. 1992).

> The system consists of one or more EEG detectors (Nos. 10a-n) each having input lines (No. 12) from plurality of users. The EEG detectors are designed to generate output signals corresponding to different brain waves to provide signals or actually controlling an output device (No. 30). The EEG devices also stores unique stimuli depending on the user's brainwaves onto conventional strip chart recorders or magnetic tape. One advantage of this system is the fact that a productive function is performed using empathy training whereby two or more subjects may be trained to produce theta waves, either simultaneously or synchronously. Also elderly subjects can be trained to provide beta brainwaves on command.
>
> Since both **Junker** and **Hartzell et al** both pertain to brainwave controlled apparatus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to arrange the system of Junker to be used by a plurality of users and for storing user unique stimuli for the purpose of accomplishing and recording productive tasks through the use of simultaneous or synchronous activation through multiple users. Also, the benefits to the elderly and children should not be overlooked. pp. 9-10, August 28, 2000 Office Action.

However, since Claim 18 is dependent upon Claim 1, Claim 18 is patentable for the same reasons. In addition, the Examiner fails to address the further limitation of Claim 18 that states that the user unique stimuli are usable by the computer *for security or identification of users*. Nowhere does Hartzell, nor the combination of Junker and Hartzell, teach or suggest having a computer use these user unique stimuli for security or identification of users as specified in the '625 application on page 39, lines 5-17. Therefore, for all of the above reasons, Applicant respectfully submits that Claim 18 is patentable over the art of record and respectfully requests that the §103(a) rejection be withdrawn.

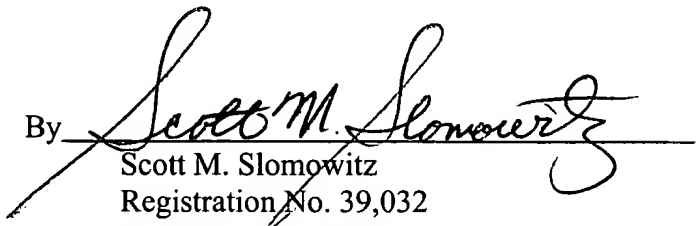
CONCLUSION

In view of the above remarks, Applicant submits that the rejection of Claims 1-2, 4, 9, 12, 15, 17-18, 21, 38, 40, 44-45, 51,55 and 67-70 is improper and should be reversed and such action is respectfully requested.

Respectfully submitted,

CAESAR, RIVISE, BERNSTEIN,
COHEN & POKOTILOW, LTD.

February 2, 2001

By 

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CERTIFICATE OF MAILING

I hereby certify that the foregoing APPELLANT'S BRIEF PURSUANT TO 37 CFR §1.192, in triplicate, and EXHIBIT A, in triplicate, re Application Serial No. 08/835,625, are being deposited with the United States Postal Service, as First Class Mail, postage prepaid, in an envelope addressed to: Commissioner of Patents, BOARD OF PATENT APPEALS AND INTERFERENCES, Washington, D.C. 20231, this 2nd day of February, 2001.

Scott M. Slomowitz

APPENDIX A

1. An apparatus for controlling a computer operation based on one or more stimuli sensed from at least one user thought, said apparatus comprising:

(a) stimuli input means coupled to the user for detecting at least one stimulus being caused by the at least one thought of the user;

(b) a computer having an operating system, coupled to said stimuli input means, for processing said at least one stimulus to produce a function control signal to control the operation of said computer wherein said computer does not require an articulated response from the user, said computer comprising:

(1) function selection means for receiving said at least one stimulus and wherein said function selection means comprises a memory including a correspondence between a plurality of previously-stored user stimuli and a plurality of desired function control signals;

(2) identification means, coupled to said function selection means, for comparing said at least one stimulus to said correspondence to identify a function control signal corresponding to said at least one stimulus, said function control signal being transmitted to the operating system of said computer.

2. The apparatus of Claim 1 wherein said stimuli input means comprises magnetic source imaging means.

4. The apparatus of Claim 1 further comprising auxiliary stimuli input means, coupled to said

computer, for providing additional or alternative stimuli inputs from the user using equipments capable of measuring such emissions.

9. The apparatus of Claim 1 further comprising communicating means, coupled to said computer, for communicating information pertaining to the user's thoughts.

12. The apparatus of Claim 1 wherein said computer further comprises designating means coupled to said function selection means, said designating means permitting the user to designate a particular representation to be associated with said at least one stimulus.

15. The apparatus of Claim 1 wherein said stimuli input means comprises conditioning means for conditioning said at least one stimulus for use by said computer.

17. The apparatus of Claim 1 wherein said computer further comprises a database for storing inaccuracies regarding said correspondence between said plurality of previously-stored user stimuli and said plurality of desired function control signals.

18. The apparatus of Claim 1 wherein said computer further comprises respective data bases for storing user unique stimuli from respective users, said user unique stimuli being usable by said computer for security or identification of users.

21. The apparatus of Claim 1 wherein said computer further comprises stimuli selection means for selecting stimuli from the user based upon acceptance criteria to form said previously-stored user stimuli.

38. The apparatus of Claim 1 further comprising means for detecting coactive stimuli for increasing the dependability of said function selection means.

40. The apparatus of Claim 1 further comprising means for detecting sequential stimuli for increasing the dependability of said function selection means.

44. The apparatus of Claim 1 further comprising localization means for identifying locations

in the user of the source of said at least one stimulus.

45. The apparatus of Claim 44 further comprising adapting means for adapting said apparatus to a change of location of the source of said at least one stimulus whenever the user moves.

51. The apparatus of Claim 1 further comprising bodily communication means, said bodily communication means being adapted to be coupled to the user, or within the user, to provide for a communication path for said at least one stimulus between the user's brain and a user body part to be controlled.

55. Apparatus for controlling computer operation from one or more stimuli sensed from one or more thoughts in a user's body, said apparatus comprising:

(a) detecting means for detecting said one or more stimuli sensed from said one or more thoughts to produce one or more detected stimuli,

(b) selecting means for receiving one or more of said detected stimuli to perform a function and selecting a correspondence to one or more user thoughts to produce a selected function and wherein said selecting means does not require an articulated response from the user,

(c) identification means for identifying one or more said detected stimuli as corresponding to said selected function for producing a function control signal,

(d) receiving means for receiving said function control signal for said controlling said computer operation.

67. An apparatus for controlling a computer operation based on one or more stimuli sensed from at least one user thought pattern, said apparatus comprising:

(a) stimuli input means coupled to the user for detecting at least one stimulus being caused by the at least one thought pattern of the user;

(b) a computer having an operating system, coupled to said stimuli input

means, for processing said at least one stimulus to produce a function control signal to control the operation of said computer wherein said computer does not require an articulated response from the user, said computer comprising:

(1) function selection means for receiving said at least one stimulus and wherein said function selection means comprises a memory including a correspondence between a plurality of previously-stored user stimuli and a plurality of desired function control signals;

(2) identification means, coupled to said function selection means, for comparing said at least one stimulus to said correspondence to identify a function control signal corresponding to said at least one stimulus, said function control signal being transmitted to the operating system of said computer.

68. Apparatus for controlling computer operation from one or more stimuli sensed from one or more thought patterns in a user's body, said apparatus comprising:

(a) detecting means for detecting said one or more stimuli sensed from said one or more thought patterns to produce one or more detected stimuli,

(b) selecting means for receiving one or more of said detected stimuli to perform a function and selecting a correspondence to one or more user thought patterns to produce a selected function and wherein said selecting means does not require an articulated response from the user,

(c) identification means for identifying one or more said detected stimuli as corresponding to said selected function for producing a function control signal,

(d) receiving means for receiving said function control signal for said controlling said

computer operation.

69. An apparatus for controlling a computer operation based on one or more stimuli sensed from at least one user thought category, said apparatus comprising:

(a) stimuli input means coupled to the user for detecting at least one stimulus being caused by the at least one thought category of the user;

(b) a computer having an operating system, coupled to said stimuli input means, for processing said at least one stimulus to produce a function control signal to control the operation of said computer wherein said computer does not require an articulated response from the user, said computer comprising:

(1) function selection means for receiving said at least one stimulus and wherein said function selection means comprises a memory including a correspondence between a plurality of previously-stored user stimuli and a plurality of desired function control signals;

(2) identification means, coupled to said function selection means, for comparing said at least one stimulus to said correspondence to identify a function control signal corresponding to said at least one stimulus, said function control signal being transmitted to the operating system of said computer.

70. Apparatus for controlling computer operation from one or more stimuli sensed from one or more thought categories in a user's body, said apparatus comprising:

(a) detecting means for detecting said one or more stimuli sensed from said one or more thought categories to produce one or more detected stimuli,

(b) selecting means for receiving one or more of said detected stimuli to perform a function and selecting a correspondence to one or more user thought categories to produce a selected function and wherein said selecting means does not require an articulated response from the user,

(c) identification means for identifying one or more said detected stimuli as corresponding to said selected function for producing a function control signal,

(d) receiving means for receiving said function control signal for said controlling said computer operation.